

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

BARKAN WIRELESS IP HOLDINGS, L.P.,

Plaintiff,

v.

**SAMSUNG ELECTRONICS CO., LTD.,
SAMSUNG ELECTRONICS AMERICA,
INC., VERIZON COMMUNICATIONS, INC.
and CELLCO PARTNERSHIP d/b/a
VERIZON WIRELESS,**

Defendants.

Civil Action No. 2:18-cv-00028

JURY TRIAL DEMANDED

BARKAN'S REPLY CLAIM CONSTRUCTION BRIEF

TABLE OF CONTENTS

Table of Contents	i
Table of Authorities	ii
Exhibit List.....	iv
1. Gateway	1
2. Packet-Based Data Network	1
3. Coordination Center.....	2
4. Consideration-Related Policy Database.....	3
5. Route Data	3
6. Regulating Data Flow	4
7. A Controller Adapted to Regulate Data Flow.....	4
8. Connection Regulator Adapted to Facilitate Data Flow	5
9. Public Internet.....	6
10. Tamper-Free Unit/Tamper Free Hardware	6
11. Transmission Power Lower than Transmission Power of Conventional Base Station	7
12. Produces a Cell Smaller than Macrocells of Conventional Base Stations.....	8
13. Add-On Base Station is Installed by an Individual or Entity, Separate and Distinct from the Telephone Service Provider, With Access to the Public Internet	9
14. Unique Identity Bound to a Cryptographic Key	9
15. Transmit Recurrent Updates	10
16. Recurrently Issuing an Operating License	10
17. Adapted To.....	10

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>AIA Eng’g Ltd. v. Maggoteaux Int’l S/A</i> , 657 F.3d 1264 (Fed. Cir. 2011).....	4
<i>In re Aspec Eyewear, Inc. v. Marchon Eyewear, Inc.</i> , 672 F.3d 1335 (Fed. Cir. 2012).....	10
<i>Astute Tech., LLC v. Learners Digest Int’l LLC</i> , No. 2:12-cv-689-JRG, 2014 WL 1385191 (E.D. Tex. Apr. 2, 2014).....	10
<i>Diebold Nixdorf, Inc. v. ITC</i> , 899 F.3d 1291 (Fed. Cir. 2018).....	5
<i>Hill-Rom Servs., Inc. v. Stryker Corp.</i> , 755 F.3d 1367 (Fed. Cir. 2014).....	10
<i>Intellectual Ventures II LLC v. BITCO Gen. Ins. Corp.</i> , 2016 WL 125594 (E.D. Tex. Jan. 11, 2016).....	5
<i>Intervet v. Merial Ltd.</i> , 617 F.3d 1282 (Fed. Cir. 2010).....	4
<i>Invitrogen Corp. v. Biocrest Mfg., L.P.</i> , 424 F.3d 1374 (Fed. Cir. 2005).....	7
<i>Liebel-Flarsheim Co. v. Medrad, Inc.</i> , 358 F.3d 898 (Fed. Cir. 2004).....	2, 3
<i>MacroPoint, LLC v. Ruiz Food Prods., Inc.</i> , 2018 WL 887434 (E.D. Tex. Feb. 14, 2018)	5
<i>One-E-Way, Inc. v. Int’l Trade Comm’n</i> , 859 F.3d 1059 (Fed. Cir. 2017).....	7
<i>Phillips v. AWH Corp.</i> , 415 F.3d 1303 (Fed. Cir. 2005).....	1, 3
<i>Saint Lawrence Comms. LLC v. ZTE Corp.</i> , No. 2:15-cv-349, 2016 WL 6275390 (E.D. Tex. Oct. 25, 2016).....	7
<i>Telecordia Techs., Inc. v. Cisco Sys.</i> , 612 F.3d 1365 (Fed. Cir. 2010).....	4

<i>Williamson v. Citrix Online, LLC</i> , 792 F.3d 1339 (Fed. Cir. 2015).....	4
<i>Zeroclick, LLC v. Apple Inc.</i> , 891 F.3d 1003 (Fed. Cir. 2018).....	6

EXHIBIT LIST

Exhibit A	U.S. Patent No. 8,014,284
Exhibit B	U.S. Patent No. 8,559,312
Exhibit C	U.S. Patent No. 9,392,638
Exhibit D	'284 Patent File History
Exhibit E	IPR2018-01659, Paper 2
Exhibit F	American Heritage Dictionary (4th ed.)
Exhibit G	Microsoft Press Computer Dictionary
Exhibit H	IEEE Dictionary (6th ed.)
Exhibit H.1	IEEE Dictionary (6th ed.)
Exhibit I	IBM Dictionary of Computing
Exhibit I.1	IBM Dictionary of Computing
Exhibit J	Hargraves's Communications Dictionary
Exhibit K	Beginner's Guide to Internet Protocol (IP) Addresses, ICANN 2011
Exhibit L	Newton's Telecom Dictionary (11th ed.)
Exhibit L.1	Newton's Telecom Dictionary (11th ed.)
Exhibit M	Introduction to Networking: How the Internet Works
Exhibit N	IPR2018-01186, Paper 6
Exhibit O	Merriam-Webster's Collegiate Dictionary (10th ed.)
Exhibit P	Lanning Deposition Transcript
Exhibit Q	IPR2017-00588, EX1003
Exhibit R	IPR2019-0100, Paper 1
Exhibit S	Modern Dictionary of Electronics (7th ed.)
Exhibit T	Webster's New World Dictionary of Computer Terms (5th ed.)
Exhibit U	Additional Excerpts from EPO Prosecution History

Exhibit V	Illustrated Dictionary of Electronics (2d ed.)
Exhibit W	Comprehensive Dictionary of Electrical Engineering (1999 ed.)
Exhibit X	Automobile Electrical System – How Voltage Regulators Work
Exhibit Y	Declaration of Dr. Gary Lomp, PhD

Defendants’ brief fails to support their proposed constructions, which improperly import claim limitations from the specification, exclude embodiments, and needlessly complicate the *Markman* process by proposing constructions of understandable terms. Defendants’ lack of intrinsic evidence to support their strained constructions is demonstrated by their reliance on their expert declaration, which is afforded little or no weight, particularly given its inconsistency with the intrinsic evidence. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1318 (Fed. Cir. 2005).

1. **GATEWAY** Defendants are manufacturing disputes to force claim construction where none is necessary. As to the first purported dispute—whether a gateway requires two networks—the claim language tells the jury what is on each side of the claimed gateway. *See, e.g.*, Opp. at 2-3. As to the second, Defendants offer no reason to construe a gateway as a “network node (hardware or software).” Opp. at 3. The claims already state that the gateways are connected to networks. Describing a gateway as either “hardware or software” provides no useful information. Defendants’ proffer of dictionary definitions is unhelpful and unwarranted because the term is readily understandable in light of its plain meaning, the specification, and claim context.

2. **PACKET-BASED DATA NETWORK** Defendants’ construction is wrong because it references not packets (the claim term), but “groups of data”; and because networks transmitting only such “groups of data”—such as circuit-switched networks—were squarely distinguished in the ’284 prosecution history. *See* Ex. D at -356-57; *see id.* at -547-49 (distinguishing LAN system from IP connection). Indeed, the extrinsic evidence Defendants submitted *defines* “packet switching” networks to require transmission of *packets*. *See* Opp. Br., Ex. 2 at -38120 (defining “packet switching network” as “a network designed to carry data in the form of packets” and also defining “packet switching”); Ex. H.1 at 740–41 (similar). Defendants’ expert agreed there was no difference between a packet-switched network and a packet-based data network. Ex. P at 15:22-16:3; *see also* Ex. Q at 21 (same expert in another proceeding stating “a ‘packet-switched’ network enables the transfer of data packets from one point to another”).

Defendants’ construction is too narrow because it adds protocol limitations (control, error, and sequencing) that do not appear in the intrinsic evidence. *See* Opp. at 5. Additionally,

their proposal is inconsistent with their construction of “consideration-related policy database,” where they contend *that the packet-based data network is the Internet*. See Opp. at 9 (advocating construction of consideration-related policy database in ’284 claim 4 to be “on the Internet”).

3. COORDINATION CENTER Defendants are wrong that coordination center (also called a “cellular center” or “center” in the specification) is a “coined term,” Opp. at 5-6, as such known centers were merely adapted for the invention, *see* Opp. at 5; Ex. A at 6:7-36; 6:51-60 (“cellular coordination center”); *id.* at 7:28-30 (“Unlike *presently used cellular centers, the center 3* of the novel network does not need to carry the role of a switchboard.” (emphasis added)).

Even if “coordination center” had been coined, the specification does not require it to always determine and establish a price policy. The pricing policy is a *potential* responsibility, not a mandatory one. *See Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 908 (Fed. Cir. 2004) (written description must contain “a clear disavowal”); *see also* Ex. P at 32:8-15. A review of the other potential functions of the coordination center (*see, e.g.*, Ex. A at 7:42-55, 7:65-67, 8:1-5, 9:21-40)—which Defendants do not include in their construction—illustrates that the coordination center *may* have, but need not have, various functions, including coordinating operation and disseminating pricing policies. While the independent claims of the ’284 and ’312 are directed to some coordination center activities detailed in the specification, none requires determining and disseminating a price policy or “coordinating the operation” of the base stations. Defendants’ argument that the coordination center must “disseminate[] a price policy,” Opp. at 5, improperly imports a limitation into the independent claims of the ’284 and ’312. Rather, the coordination center in the independent claims focuses on regulation of data flow (’284 claims) and receiving the physical location of the base station (’312 claims).

Finally, Defendants’ construction contradicts the prosecution history, in which the “coordination center” was added while activities relating to pricing policies (*i.e.*, “consideration”) were *removed* from claim 40 (issued claim 1), and placed in separate dependent claim 43 (issued claim 4). Ex. D at -347-348. Defendants’ EPO prosecution citations do not support its position. As to Opp., Ex. 3 at -30452, Defendants ignore that this discussion related to

a rejection not of an independent claim limitation, but of *dependent claim 14*, which was one that required “a billing unit” and “a price policy.” Ex. U, SAMSUNG-30468. By contrast, independent claim 1 required a “coordination center,” without referencing pricing. *Id.* at -467. That the “pricing” element appears as a limitation in a separate dependent claim shows that “coordination center” does *not* require it. *See Phillips*, 415 F.3d at 1314–15. As for Opp. Ex. 3 at -30347, Barkan explained that the coordination center’s provision of “information required for making a call” *may* include pricing information, not that it must. *Id.*

4. CONSIDERATION-RELATED POLICY DATABASE Defendants fail to meet their burden to show prosecution-history disclaimer that “consideration-related policy database” must be (a) located on the Internet and (b) distinct from “the authentication database.”

As to the proposed “on the Internet” limitation, Defendants’ quoted passage (Ex. D at -497) begins with “For example,” indicating that hosting the database on the Internet is an option, not a requirement. The claim language does not require that the consideration-related policy database be located *on* the data network, but rather, that it provide information to base stations *through that network*. In other words, there may be *network(s) between the consideration-related policy database and the packet-based data network*, through which it communicates with base stations. The discussions at Ex. D -427-29 and -462-64 are to the same effect.

With respect to Defendants’ other imported limitation, no claim or specification language even mentions an “authentication database.” That term appears only in the prosecution history where the applicant explained, “in *most cellular network architectures* the billing database (i.e. consideration related database) and the authentication database are not the same.” Ex. D at -392. The applicant was describing “most,” not all, existing architectures, much less that of the present invention, which never mentions an “authentication database.” Accordingly, Defendants fail to demonstrate a clear disclaimer. *Liebel-Flarsheim*, 358 F.3d at 909.

5. ROUTE DATA No construction of this term is needed. Defendants’ construction of “route” is premised on the following syllogism: (i) “route” can bear a specific technical meaning of “select or determine the path that data will take”; (ii) that form of “routing” can be performed

only by network routers (not transmitting devices); and (iii) although a POSITA would *know* that transmitting devices cannot “route data” in that fashion, the claims nonetheless require the impossible. In short, Defendants propose a construction of “route” that they concede a POSITA would know *cannot be performed* by the claimed invention in a packet-based data network. *See* Ex. P at 48:3-49:2. Their argument is meritless because “[a] construction that renders the claimed invention inoperable should be viewed with extreme skepticism.” *AIA Eng’g Ltd. v. Maggoteaux Int’l S/A*, 657 F.3d 1264, 1278 (Fed. Cir. 2011) (citation omitted); *see also Intervet v. Merial Ltd.*, 617 F.3d 1282, 1290 (Fed. Cir. 2010) (construing “specific to” in colloquial or non-technical sense because the technical sense did not make sense in context of claim).

6. REGULATING DATA FLOW Defendants devote only a few unpersuasive sentences to this term and never mention their proposed construction, much less attempt to support it. *See* Opp. at 16-17. Regulating data flow refers to controlling access to the data network, *see* Br. 11, and Defendants make no attempt to rebut the unambiguous statements in the prosecution history so indicating. *See, e.g.*, Ex. D at -357 (discussing regulating “access”). For example, the controller regulates access to the network based in part on whether the calling device has been authorized. Ex. A at 9:26-30. Similarly, the base station itself may be authorized as part of the network. *Id.* at 9:34-47. Defendants’ argument that these passages relate to the *coordination center* not the *gateway controller* is misplaced. The claims require the controller to regulate data flow *based on information received from the coordination center*. *See id.* at 17:19-23 (claim 1).

7. A CONTROLLER ADAPTED TO REGULATE DATA FLOW Defendants cannot overcome the presumption that “controller adapted to regulate data flow” is not a MPF term because the claims recite sufficiently definite structure. *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1349 (Fed. Cir. 2015). For example, claim 1 specifies that it is the *controller* that regulates data flow between the mobile device and the packet-based data network, and that it does so based on information received from the coordination center. As Barkan’s expert, Dr. Lomp, explains, an “ordinary artisan would have recognized the controller as an electronic device with a known structure.” *Telecordia Techs., Inc. v. Cisco Sys.*, 612 F.3d 1365, 1377 (Fed. Cir. 2010); *see*

Intellectual Ventures II LLC v. BITCO Gen. Ins. Corp., 2016 WL 125594, at *8 (E.D. Tex. Jan. 11, 2016) (“Structure may also be provided by describing the claim limitation’s operation, such as its input, output, or connections.” (quotation omitted)); *MacroPoint, LLC v. Ruiz Food Prods., Inc.*, 2018 WL 887434, at *6 (E.D. Tex. Feb. 14, 2018) (citing I/O ports and connections disclosed in specification as evidence of structure); Ex. Y (Lomp Decl.) at ¶¶ 32-41.

Defendants’ reliance on *Diebold Nixdorf, Inc. v. ITC*, 899 F.3d 1291 (Fed. Cir. 2018), is misplaced. A POSITA understands a “controller” as a specific structure capable of regulating data flow. Ex. Y (Lomp Decl.) at ¶¶ 33-35; Ex. S at 151; Ex. I.1 at 145; Ex. T at 127; Ex. L at - 4292. Even Mr. Lanning admitted familiarity with hardware controllers. *See* Ex. P at 5:7-13. This is unlike the “cheque standby unit” in *Diebold*, which fails “to recite sufficiently definite structure and recites a function without reciting sufficient structure for performing that function.” 899 F.3d at 1298. The fact that the “controller” limitation also contains language describing the controller’s operation does not make it MPF: the question is whether the claims recite sufficient structure, which they do. Ex. Y (Lomp Decl.) at ¶¶ 33-36; *see also Intellectual Ventures*, 2016 WL 125594, at *8 (“Mere recitation of function is not the proper legal test.”).

Even if the limitation were MPF, Defendants fail to present clear and convincing evidence of indefiniteness premised on MPF treatment, as the specification provides specific examples of the controller’s structure and operation. *See* Ex. Y (Lomp Decl.) at ¶¶ 37-40; Br. at 13-14. The specification explains what the controller controls; where it is located; and what operations it performs. Defendants’ expert speculates about possible meanings of “regulate data flow.” *See* Lanning Dec. at ¶ 39. That is a red herring; there is no need to speculate because the specification (and prosecution history) explains what it means.

Finally, Defendants elsewhere contended that the term is *not* MPF by proposing a *non-MPF construction* in their recent IPR filings. Ex. E at 2-3, 38-41 (arguing ’284 claim 1 was “virtually identical” to a claim with different language); Ex. R at 2-3, 37-40 (same).

8. CONNECTION REGULATOR ADAPTED TO FACILITATE DATA FLOW A regulator is a well-known structure in the art. Ex. Y (Lomp Decl.) at ¶ 43; Ex. S at 637; Ex. V at 671; Ex. W at

542; Lanning Dec. at ¶ 43 (describing voltage regulators). A connection regulator, as defined by the claims, is a specific type of regulator. The claim language dictates that the connection regulator is a component of the base station/gateway; is located between the mobile device and the packet-based data network; and facilitates data flow between the two. *See* Ex. Y (Lomp Decl.) at ¶ 43; Ex. B, Claim 1; *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1007 (Fed. Cir. 2018) (whether a term is MPF is determined under traditional claim construction framework). A skilled artisan would understand the meaning and structure of the term from the claim language—that it is a controller (call controller 54) adapted to regulate data flow and control access to the data network. Defendants again rely on their expert’s declaration, but his conclusory declaration never cites the ’312 patent, and instead references claim language from a patent that does not contain the disputed limitation. *See* Lanning Dec. at ¶¶ 42–44.

Even if the term were MPF, Defendants cannot prove by clear and convincing evidence that it is invalid. The specification provides sufficient structure for a skilled artisan to know and understand what structure corresponds to the limitation. The claimed connection regulator is part of the gateway, such as base station 43 in Figure 1. *See* Ex. B. Figure 2 illustrates the structure of the base station and its component parts. *See id.* As Figure 2 illustrates, the call controller 54 is the component that facilitates data flow between the first and second communication channels, 51 and 52, by supervising and controlling the operation of the channel electronic means, such as a switch. Ex. A at 10:56-63. Defendants argue the appropriate structure should be the “channel electronic means.” *See* Opp. at 17-18. But as the specification explains, it is *controller 54* that controls and supervises channel electronic means 53. Ex. A at 10:61-62.

9. PUBLIC INTERNET Defendants’ proposal that the “public Internet” is “formed by devices that are assigned public IP addresses” should be rejected. Mr. Lanning admitted that devices which are not part of the public Internet can be assigned public IP addresses. *See* Ex. P at 60:1-14. For this reason alone, Defendants’ proposal must be rejected. The jury will readily understand the meaning of “public Internet,” and no construction is necessary.

10. TAMPER-FREE UNIT/TAMPER FREE HARDWARE “Tampering” was “known in the art”

at the time of invention, Lanning Dec. ¶ 59, and the jury will likewise understand what it means for something to be resistant to tampering. The patents reference examples thereof, such as devices with “the means to destroy . . . contents,” Ex. A at 10:41–:43, and using digital documents that are “encrypted so as to prevent tampering with,” Ex. A at 6:24–:25. Barkan’s construction that “tamper-free” means preventing or inhibiting tampering is correct because the specification examples of tamper-free units do not make tampering *impossible*, but merely inhibit tampering. Because tampering is a well-understood term, there is not any reason to import specific means of inhibiting tampering (such as destroying device contents) into the claims.

11. TRANSMISSION POWER LOWER THAN TRANSMISSION POWER OF CONVENTIONAL BASE STATION Defendants waived their indefiniteness argument. *See* Opp. 21 n.6. They also attempt to obfuscate a simple, easily-understood feature—that the patented device is a less powerful alternative to conventional cell towers that consumers can install in homes or businesses.

Definiteness does not require that “conventional base stations” have a precise numerical range of transmit powers; or that the claims recite them. “[A] patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement.” *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 424 F.3d 1374, 1384 (Fed. Cir. 2005); *see One-E-Way, Inc. v. Int’l Trade Comm’n*, 859 F.3d 1059, 1063 (Fed. Cir. 2017) (“relative terms” such as “substantial” and “high” are “sufficiently definite”). Defining the scope of an invention with relative terms comparing it to other inventions is often essential to patent claiming, as such terms are needed to capture “implementation-specific details” that may vary between devices. *Saint Lawrence Comms. LLC v. ZTE Corp.*, No. 2:15-cv-349, 2016 WL 6275390, at *63 (E.D. Tex. Oct. 25, 2016); *see also id.* (“[P]atent law does not require that all possible lengths corresponding to the spaces in hundreds of different automobiles be listed in the patent, let alone that they be listed in the claims.” (quotation marks omitted)); *id.* at *62 (emphasis added) (holding that term “frequency bandwidth generally higher than a frequency bandwidth of [the/said] over-samples synthesized signal version” was sufficiently definite).

A skilled artisan would understand the distinction recited in the claims. Ex. Y (Lomp

Decl.) at ¶¶ 45-63. As Dr. Lomp explains, skilled artisans drew the same distinction as the claims at the time of the invention. *Id.* Defendants’ own expert *confirmed* that cells “cover [a] predetermined amount of geographic area” Ex. P at 72:17-19. Because cells have a predetermined size, they necessarily have a required minimum transmission power. *See id.* at 74:6-21. The claim language then defines the transmission power of the “add-on” base stations—which the specification states are capable of being installed in the home, Ex. at 7:21-:23, 16:45-:46—as implicating a *lower* transmission power than what is used by conventional base stations, such as cell towers that cover a predetermined amount of geographical area. Because the specification discloses multiple embodiments, *see, e.g., id.* at 7:21-23 (home), 16:1-4 (vehicle), and is not restricted to a particular cellular network implementation, *see id.* at 12:19-21 (networks used by base station could include “GSM, AMPS, CDMA etc.”), it is sensible for the claim language to use relative terms (not numerical values) to define claim scope. Defendants’ extrinsic evidence only underscores this point by demonstrating that not every cellular network technology employs the same transmission power. *See* Opp. Ex. 4 at 5-6 (describing differing transmission powers associated with different cellular network standards and minimum cell sizes). Moreover, Defendants’ extrinsic evidence shows that standards bodies promulgated guidelines as to macrocell transmission power of which a POSITA would be aware. *See* Opp. Ex. 4 at 6 (defining maximum base station wattage for cellular bands).

12. PRODUCES A CELL SMALLER THAN MACROCELLS OF CONVENTIONAL BASE STATIONS

Defendants waived their indefiniteness argument as to this term for the same reason, and also failed to prove indefiniteness by clear and convincing evidence. The claim language here is sufficiently definite notwithstanding its use of relative terms for the same reasons stated above.

Dr. Lomp explains that skilled artisans understood and used this same distinction at the time of the invention. Ex. Y at ¶¶ 64-67. Defendants’ argument that a POSITA could not identify a lower boundary for cell size and therefore would not understand the phrase “cell smaller than macrocells of conventional base stations” is even debunked by the extrinsic evidence they submitted, which contains the very minima that Defendants claim do not exist. *See, e.g.,* Opp.

Ex. 6, at 2 (“The current situation in most cellular networks is that in city centers, the conventional size cells, often called macrocells are small, i.e. only 500m to 2km across.” (emphasis added)); Ex. 4, at 6 (explaining that “minimum” “[c]ell radius (km)” for macrocells is 0.5km for GSM 900, DCS 1800, PCS 1900, North American D-AMPS, and Japan PDC standards (emphasis added)). Defendants’ argument that macrocell size can vary between urban and rural areas does not help them, as rural macrocells are typically larger, and thus subject to the same minima. *See, e.g.*, Lanning Dec. ¶ 69 (stating that in rural areas base stations are typically “spaced farther apart”). Because a POSITA would know of the cell sizes corresponding to conventional base stations, Defendants not only failed to meet their burden, but disproved their indefiniteness theory with the evidence they submitted.

13. ADD-ON BASE STATION IS INSTALLED BY AN INDIVIDUAL OR ENTITY, SEPARATE AND DISTINCT FROM THE TELEPHONE SERVICE PROVIDER, WITH ACCESS TO THE PUBLIC INTERNET Defendants’ argument that the term is indefinite because it is “unclear” whether it claims an apparatus or method fails. The limitation simply recites the plug-and-play nature of the claimed device (which the Patents-in-Suit distinguish from the expensive, static infrastructure associated with conventional macrocells, such as cell towers, that are installed only by telephone service providers). This term places a design limitation on the claimed structure: that the base station be configured for installation by *non-telecom* carriers. *Cf. Opp.* at 26.

14. UNIQUE IDENTITY BOUND TO A CRYPTOGRAPHIC KEY Defendants’ requirement that the unique identity and cryptographic key must be “included in a certificate issued by a certifying authority” is an attempt to import a limitation into the claim regarding how the binding is accomplished. *See Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1372 (Fed. Cir. 2014). The specification explains that “various means may be used to achieve the unique identity of each add-on base station”; identification is not limited to a specific type of cryptographic key. Ex. A, at 11:25-26. Even the passage Defendants cite as limiting contains permissive language. *See id.* at 8:9-11 (“Each phone, base station and the cellular center 3 **may have** their own digital certificate, which binds a cryptographic public key, with an identifier.” (emphasis added)).

Defendants' expert declaration to the contrary should be given little weight because it is a near-verbatim recitation of their attorneys' brief. *Compare* Lanning Dec. at ¶ 76 with Opp. at 26.

15. TRANSMIT RECURRENT UPDATES This term should be given its plain and ordinary meaning. Defendants' request that "recurrent" be construed as "repeated" is meritless because it is "not helpful to simply substitut[e] . . . one word for another word" when it adds nothing beyond such plain meaning. *Astute Tech., LLC v. Learners Digest Int'l LLC*, No. 2:12-cv-689-JRG, 2014 WL 1385191, at *21 (E.D. Tex. Apr. 2, 2014).

16. RECURRENTLY ISSUING AN OPERATING LICENSE This term does not require construction because jurors will know what it means. Replacing "recurrently" with "repeatedly" adds nothing. Defendants' convoluted construction of an operating license as a "certificate or another digital document, to the effect that this phone/base station is part of my network and is in working order" is wrong. The passages they cite define the term *certificate*, not *operating license*. See Ex. A at 9:34–36. "[U]pdated operating license" is explained elsewhere as a prerequisite for requesting services from add-on base stations. See *id.* at 9:41–43. No elaboration is required because the meaning of "operating license" (a license to operate) is obvious.

17. ADAPTED TO Defendants again improperly seek to replace one understandable term ("adapted to") with another ("configured to"). See *Astute Tech.*, 2014 WL 1385191, at *21 ("not helpful" to substitute one word of plain meaning for another). The goal of their word substitution is to get a narrower scope to exclude devices "capable of" performing recited functions and include those devices presently "configured" to perform such functions. Defendants' construction fails because it lacks specification support. Indeed, the very case they cite shows it is wrong. See *In re Aspec Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012). *Aspec* construed "adapted to" as not meaning "capable of" because the "claim immediately preceding" it *actually said* "capable of," suggesting that "adapted to" must mean something different in that context. *Id.* (emphasis added). By contrast, the claims here only use the phrase "adapted to" (never "capable of"), and the cited claim language addressing what a transceiver, interface, or controller may be "adapted to" do, does not speak to the issue.

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Respectfully Submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was filed electronically in compliance with Local Rule CV-5(a). Therefore, this document was served on all counsel who are deemed to have consented to electronic service. Local Rule CV-5(a)(3)(A). Pursuant to Fed. R. Civ. P. 5(d) and Local Rule CV-5(d) and (e), all other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing by email on this the 8th day of January, 2019.

/s/ William D. O'Connell
William D. O'Connell